9718

TOP SECRET

PRIORITY

T O P S E C R E T 172253Z APR 70 CITE [redacted] 8356

[redacted]

CORONA

[redacted]

REF A [redacted] 4417
B 4491

SUBJECT: MSN 1109 PHOTOGRAPHIC EVALUATION INTERIM REPORT (PEIR)

1. NUMERICAL SUMMARY:

MSN NO AND DATES: 1109-1, 4-11 MAR 70, RECOVERY 12 MAR 70/0108Z
1109-2, 11-23 MAR 70, RECOVERY 23 MAR 70/2350Z

LAUNCH DATE AND TIME: 4 MAR 70/2215Z
VEHICLE NO: 1657
CAMERA SYSTEM: CR-10
PAN CAMERAS: AFT LOOKING 320, FILM TYPE 3404
FWD LOOKING 321, FILM TYPE 3404
DISIC UNIT: NO. 9
STELLAR LENS: PORT F 2.8, 1.5 SEC, NO FILTER
STB'D F 2.8, 1.5 SEC, NO FILTER
FILM TYPE: 3401

1970 APR 18 00 11Z

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TERRAIN LENS: F6.3, 1/500 SEC, FIXED W-12 FILTER
FILM TYPE: 3400
RECOVERY REVS: MSN 1109-1, REV 115
MSN 1109-2, REV 309
LAUNCH WINDOW: 2100Z TO 2200Z (EXTENDED TO 2215Z) 4 MAR 70

2. CAMERA SETTINGS:

FWD LOOKING: WRATTEN W-25 (PRIMARY)
WRATTEN W-23A (ALTERNATE)
SLIT WIDTH POS 1 - 0.180 INCHES (MEASURED)
2 - 0.214 INCHES (MEASURED)
3 - 0.261 INCHES (MEASURED)
4 - 0.145 INCHES (MEASURED)
FAIL SAFE 0.210 INCHES (MEASURED)

AFT LOOKING: WRATTEN W-23A (PRIMARY)
WRATTEN W-25 (ALTERNATE)
SLIT WIDTH POS 1 - 0.150 INCHES (MEASURED)
2 - 0.197 INCHES (MEASURED)
3 - 0.238 INCHES (MEASURED)
4 -0.267 INCHES (MEASURED)
FAIL SAFE - 0.164 INCHES (MEASURED)

25X1

DISTRIBUTION		
CY	OFFICE	PI
1 2	FILE	
	CABLE SEC.	
	FF&B/RD	
	SECUR.	
3 4	TSSG/NPIC	D
	PSG/OC	
	RRD	
	REPRO	
	AID	
	IEG	
	IEG/OD	
	SCIEN	
	WEST	
	EAST	
	M&S	
	[redacted]/PHD	
	IAS	
	DIA-XX4	
	SPAD	
	DIA-AP	
	[redacted]	25X1
	CMX	

25X1
25X1

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3. PERFORMANCE SUMMARY: [redacted] REPORTED THE PI SUITABILITY OF THIS MISSION RANGED FROM FAIR TO GOOD. THE BEST MOBILE CORN TARGET RESOLUTION OBTAINED [redacted] GRD IN BOTH DIRECTIONS. THIS WAS THE FORWARD LOOKING UNIT. SMALL SCALE DUE TO ALTITUDES WHICH VARIED FROM 85NM TO 105NM AFFECTED THE PI READOUT, AS ON SOME PREVIOUS MISSIONS. MISSION 1109 HAD FEWER ANOMALIES THAN ANY OTHER J-3 MISSION.

25X1

ADVANCE COPY SANITIZED WITH TEXT

THE MIP OF 110 PLACES MISSION 1109-1 AS ONE OF THE THREE HIGHEST RATED MISSIONS. THE OVERALL IMAGERY EXHIBITS CHARACTERISTIC VARIABILITY. EXAMPLES OF VARIATION ACROSS THE FORMAT WERE OBSERVED ON BOTH CAMERA SYSTEM PRODUCTS, WITH THE POORER QUALITY EXHIBITED ON THE TIME TRACK EDGE. HOWEVER, MOST OF THE IMAGERY THROUGHOUT THE MISSION IS OF GOOD QUALITY. EXAMPLES OF THE BETTER IMAGERY MAINTAIN THEIR QUALITY AT 50X MAGNIFICATION.

THE LOWER MIP RATING OF 1109-2 IS NOT FULLY UNDERSTOOD, BUT SOME FACTORS ARE EVIDENT. A MINOR AFFECT IS THE HIGHER ALTITUDE (98.5NM COMPARED TO 94.0NM), BUT THE MAJOR AFFECT IS THE POOR

TOP SECRET

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ATMOSPHERIC CONDITION IN THE 1109-2 MIP FRAME. IN THIS REGARD, THE PET FEELS THAT THE MIP PERORMANCE OF 100 IS NOT AS FAR ABOVE THE AVERAGE QUALITY OF THE PHOTOGRAPHY AS IS THE MIP OF 110. THE BEST IMAGERY OF THIS MISSION APPROACHES BUT DOES NOT EQUAL THAT OF THE

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BEST EVER, WITH TYPICAL QUALITY BEING BETTER THAN A NOMINAL J-3 PERFORMANCE.

BOTH THE OVERALL IMAGE QUALITY AND THE BEST IMAGE QUALITY OF THE FORWARD CAMERA IS COMPARABLE TO THAT OF THE AFT CAMERA. THIS IS COMMENSURATE WITH THE FACT THAT BOTH OF THESE UNITS EMPLOYED THIRD GENERATION LENSES FOR THE FIRST TIME.

4. PAN CAMERA ANOMALIES:

A. ANOMALY: TWO MINUS DENSITY BANDS AT THE TAKE-UP END OF SOME AFT FRAMES.

CAUSE: UNKNOWN. THE EFFECT IS SIMILAR TO THAT PRODUCED BY A HESITATION AT THE START OF SCAN. THIS ANOMALY OCCURRED IN THE BONUS AREA, THEREFORE HAVING NO ADVERSE AFFECT.

ACTION:DUE TO ITS MINOR NATURE, NO ACTION IS RECOMMENDED.

B. ANOMALY: A CREASE AND ASSOCIATED PLUS DENSITY MARK ARE PRESENT IN FRAMES 26 AND 27 OF PASS D74. IT BEGINS APPROXIMATELY 15 INCHES BEFORE AND EXTENDS 36 INCHES BEYOND A MANUFACTURING SPLICE LOCATED IN FRAME 27. THE CREASE IS LOCATED ON THE BINARY EDGE IN THE BORDER AREA OF THE FILM.

CAUSE: THE FILM MISTRACKED CAUSING IT TO RUN AGAINST A ROLLER FLANGE FOR THE 52 INCHES.

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ACTION: THIS ANOMALY IS SEEN OCCASIONALLY DURING ACCEPTANCE TESTING WITH PASSAGE OF A SPLICE. NO FURTHER ACTION IS RECOMMENDED.

C. CHARACTERISTIC ANOMALIES HAVING A MINOR AFFECT ON PERFORMANCE:

(1) MINOR FOGGING OCCURRED DURING THE SHUTDOWN PERIOD.

(2) RAIL SCRATCHING ON THE INBOARD RAIL WAS CONSISTENT WITH THAT OBSERVED ON PRE-FLIGHT FILM; THAT IS, MODERATELY HEAVY ON THE INBOARD RAIL AND MINOR ON THE OUTBOARD RAIL.

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ACTION: NO ACTION IS RECOMMENDED.

5. DISIC CAMERA PERFORMANCE: THE INDEX CAMERA IMAGE QUALITY IS GOOD AND IS CONSIDERED TO BE THE BEST OBTAINED FROM THIS SYSTEM TO DATE.

INDEX FILM RECEIVED DUAL GAMMA PROCESSING, FOR THE FIRST TIME. THE SMALL PERCENTAGE OF LOW SOLAR ELEVATION PHOTOGRAPHY PRECLUDED EXTENSIVE EVALUATION OF THE POTENTIAL ADVANTAGES EXPECTED FROM THIS PROCESSING. GENERAL OBSERVATIONS INDICATE THAT INFORMATION CONTENT OF 1109, WHERE A WIDE BRIGHTNESS RANGE WAS PRESENT, WAS BETTER THAN THAT PROVIDED BY PREVIOUS PROCESSING TECHINQUES.

A MAXIMUM LOAD OF ABOUT 2200 FEET OF INDEX FILM WAS EXPOSED FOR THE FIRST TIME WITH NO RESULTING PROBLEMS.

POINT-TYPE STAR IMAGES WERE RECORDED ON BOTH STELLAR CAMERAS. MOST PORT FRAMES CONTAIN MORE THAN 30 STAR IMAGES. MOST STARBOARD FRAMES CONTAIN MORE THAN 20 STAR IMAGES.

6. DISIC ANOMALIES:

A. ANOMALY: A LIGHT LEAK INDUCED FOG PATTERN DEGRADES APPROXIMATELY 5 FRAMES AT THE END OF MOST STELLAR CAMERA OPERATIONS. THE DENSITY OF THIS FOG PATTERN IS COMMENSURATE WITH CAMERA INOPERATIVE PERIODS.

CAUSE: FOG PATTERN, MIDWAY BETWEEN CORRESPONDING PORT AND STARBOARD FRAMES, IS MOST LIKELY THE RESULT OF AN INCOMPLETELY BAFFLED TERRAIN LENS VENT HOLE.

ACTION: VENT HOLE BAFFLING ON REMAINING UNITS WILL BE CHECKED AND MODIFIED, IF NECESSARY.

B. ANOMALY: CORONA AND DENDRITIC-TYPE FOG PATTERNS ARE PRESENT THROUGHOUT THE LAST THIRD O THE STELLAR CAMERA RECORD ON 1109-1 AND THROUGHOUT 1109-2. MINOR DENDRITIC EDGE STATIC IS PRESENT INTERMITTENTLY THROUGHOUT THE TERRAIN RECORD ON 1109-1. CORONA AND DENDRITIC FOG PATTERNS ARE PRESENT THROUGHOUT THE TERRAIN RECORD ON 1109-2.

CAUSE: DENDRITIC TRACES EMANATING FROM THE FILM EDGE ARE CHARACTERISTIC OF UNSPOOLING OR ROLLER FLANGE DISCHARGE.

THESE MARKS ARE CHARACTERISTIC OF THIS SYSTEM IN SOME SENSITIVE PRESSURE WINDOWS. SEVERITY IS MINOR ON THE TERRAIN RECORD AND MINOR TO MODERATE ON THE STELLAR RECORD. SOME CORRELATION

25X1

BETWEEN MARKING AND PMU OFF PERIODS WAS NOTED.

ACTION: NONE REQUIRED.

C. ANOMALY: A FEW INSTANCES OF IRREGULAR METERING WERE NOTED IN THE STELLAR RECORD ON 1109-2. DUE TO THIS ANOMALY, ADJACENT FRAMES ARE SOMETIMES OVERLAPPED A DISTANCE OF APPROXIMATELY 0.3 INCH.

CAUSE: THIS IS NORMAL DISIC OPERATION. IF POWER TURN-OFF OCCURS AT A PARTICULAR POINT IN THE DISIC OPERATE CYCLE, A PARTIAL STELLAR RECORD TRANSPORT CAN OCCUR. THE PROBABILITY OF OCCURRENCE IS APPROXIMATELY 1 IN 60 TURN-OFFS.

ACTION: NONE REQUIRED.

D. ANOMALY: SEVERAL MINUS DENSITY SPOTS WHICH APPEAR TO BE CAUSED BY OBSTRUCTIONS ON THE INDEX RESEAU PLATE ARE PRESENT THROUGHOUT 1109-2.

CAUSE: THIS WAS CAUSED BY EMULSION PARTICLES ON THE FOCAL PLANE PLATE. MINOR DEGRADATION NOTED IS CHARACTERISTIC O THIS SYSTEM.

ACTION: NONE REQUIRED.

E. ANOMALY: THE END OF THE INDEX FILM RECORD ON 1109-2 EXHIBITS A STRAIGHT CUT AS COMPARED WITH NORMAL SERRATED END CUT.

CAUSE: ENTIRE SUPPLY OF INDEX FILM WAS EXHAUSTED, THUS,

25X1

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RETRIEVED END WAS NORMAL FILM MANUFACTURER CUT.
ACTION: NONE REQUIRED.
6. COMMENTS: SEVERAL PRESENTATIONS WERE MADE DURING THIS MEETING. A BRIEF SYNOPSIS IS PROVIDED BELOW.
A. DUAL GAMMA PROCESSING OF MISSION 1109 INDEX RECORD. [redacted] 25X1
[redacted] STATED PRELIMINARY STUDIES AT [redacted] INDICATE DUAL GAMMA 25X1
PROCESSING OF THE INDEX RECORD IS BENEFICIAL, PARTICULARLY IN HIGH CONTRAST AREAS. HOWEVER, PRIMARY USERS OF THIS MATERIAL ARE ENCOURAGED TO EVALUATE DUAL GAMMA POTENTIAL AS RELATED TO INDIVIDUAL NEEDS.
B. SPECIALIZED DUPLICATION BRIEFING. [redacted] 25X1
PRESENTED A BRIEFING ON SPECIALIZED DUPLICATION, WITH PARTICULAR EMPHASIS ON THE USE OF HIGH CONTRAST FINE-GRAIN FILM TYPES 6451 AND SO-369. SEVERAL EXAMPLES OF HOW THESE PRODUCTS HAVE BEEN USED BY PHOTO INTERPRETERS AS AN AID IN READOUT ON RECENT MISSIONS WERE REVIEWED AND THE PRODUCT CHARACTERISTICS WERE DESCRIED. THESE PRODUCTS ARE INTENDED FOR USE WITH AREAS HAVING A VERY NARROW DENSITY RANGE"- IE, "FLAT" NEGATIVES, RATHER THAN IN LARGE VOLUME APPLICATIONS. LIKE FILM TYPE 2430.
C. BLACK/WHITE SEPARATION PRINTS FROM MISSION 1108 COLOR MATERIAL.

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THE PET WAS BRIEFED BY [redacted] ON THE STATUS OF SPECIAL 25X1
BLACK/WHITE FILM POSITIVES WHICH WERE REPRODUCED FROM SELECTED EMULSION LAYERS OF MISSION 1108 SO-242 COLOR FILM. EVALUATION OF THIS MATERIAL IS PRESENTLY BEING CONDUCTED BY [redacted] 25X1
RESULTS THUS FAR INDICATE THAT THE REPRODUCTION WHICH REPRESENTS THE RED INFORMATION (PRINTED VIA A RED FILTER ONTO A 3404 INTERNEGATIVE AND THEN DUPED ONTO 2430) IS PREFERRED FROM A PHOTOINTERPRETATION STAND-

POINT. THE EVALUATION OF THIS MATERIAL WILL CONTINUE AND MORE DETAILED RESULTS WILL BE PUBLISHED UPON ITS COMPLETION. GP-1
T O P S E C R E T EOM